

What is claimed is:

1. A piston type compressor comprising:

a housing including a cylinder bore;

5 a drive shaft supported by the housing;

a cam plate coupled to the drive shaft, the cam plate being rotated by the rotation of the drive shaft;

a piston accommodated in the cylinder bore, the piston being coupled to the cam plate, the rotation of the cam plate being converted into the reciprocating movement of the piston, in accordance with the reciprocating movement of the piston, gas being introduced into the cylinder bore and being compressed and being discharged from the cylinder bore, compression reactive force being generated while the gas is being compressed by the piston, the compression reactive force being transmitted to the housing through a compression reactive force transmission path, the compression reactive force being received by the housing, the compression reactive force transmission path traveling through a predetermined set of members in the piston type compressor; and

10

15

a vibration damping member made of a predetermined vibration damping alloy, the vibration damping member being placed at least at one position along the compression reactive force transmission path.

20

2. The piston type compressor according to claim 1, wherein said vibration

damping member is placed on at least one of the members so as not to substantially move relative to the member which is in contact with the vibration damping member.

5     3.     The piston type compressor according to claim 1, wherein the vibration damping alloy is one of ferromagnetic type including Fe-Cr-Al.

4.     The piston type compressor according to claim 1, wherein the vibration damping alloy is a ferromagnetic type including Fe-Cr-Al-Mn, Fe-Cr-Mo, Co-Ni  
10     and Fe-Cr.

5.     The piston type compressor according to claim 1, wherein the vibration damping alloy is of a compound type including Al-Zn.

15     6.     The piston type compressor according to claim 1, wherein the vibration damping alloy is a transition type including Mn-Cu and Cu-Mn-Al.

7.     The piston type compressor according to claim 1, wherein the vibration damping alloy is a twin type including Cu-Zn-Al, Cu-Al-Ni and Ni-Ti.

20

8.     The piston type compressor according to claim 1, wherein the piston type compressor is a clutchless type compressor, in which an external drive source is

coupled directly to the drive shaft to operate the compressor and which stops circulation of the gas in an external circuit in a state that the inclination angle of the cam plate is minimum while the drive shaft rotates.

5     9.     The piston type compressor according to claim 1, wherein the compression reactive force transmission path includes the piston, the cam plate, the drive shaft and the housing.

10     10.     The piston type compressor according to claim 9, wherein the vibration damping member is placed on a portion of the housing where the drive shaft is supported.

11.     The piston type compressor according to claim 9, wherein the vibration damping member has a ring shape.

15

12.     The piston type compressor according to claim 9, wherein the housing portion having a non-flat surface, the vibration damping member being placed on the non-flat surface.

20     13.     A variable displacement compressor comprising:  
a housing including a plurality of cylinder bores;  
a drive shaft supported by the housing;

a lug plate secured to the drive shaft, the lug plate being supported in the housing by a thrust bearing;

a cam plate coupled to the lug plate by a hinge mechanism that includes a guide hole and a guide ball, the cam plate being slidably supported by the drive shaft and being at a certain angle within a predetermined range with respect to the drive shaft, the cam plate being rotated by the rotation of the drive shaft;

a plurality of pistons accommodated in the cylinder bores, each piston being coupled to the cam plate, the rotation of the cam plate being converted into the reciprocating movement of the pistons, in accordance with the reciprocating movement of the pistons, gas being introduced into the cylinder bores and being compressed and being discharged from the cylinder bores, compression reactive force being generated while the gas is being compressed by the pistons and being transmitted to the housing through a compression reactive force transmission path that passes through a set of elements including the pistons, the cam plate, the hinge mechanism, the lug plate, the drive shaft, the thrust bearing and the housing, the compression reactive force being received by the housing; and

a vibration damping member made of a predetermined vibration damping alloy, the vibration damping alloy being placed at least at one position along the compression reactive force transmission path.

14. The variable displacement compressor according to claim 13, wherein

said vibration damping member is placed on at least one of the members so as not to substantially move relative to the member which is in contact with the vibration damping member.

5     15.     The variable displacement compressor according to claim 13, wherein  
said vibration damping member is placed at any combination of locations  
including a space between the housing and the thrust bearing, a space between  
the thrust bearing and the lug plate, a space between the guide ball and the guide  
hole, a space between the drive shaft and the cam plate, a space between the lug  
10     plate and the cam plate, a space between the piston and the housing and a space  
between the lug plate and the drive shaft.

16.     The variable displacement compressor according to claim 13, wherein  
the drive shaft is supported in the housing by a radial bearing, and said vibration  
15     damping member being placed between the radial bearing and the housing.

17.     The variable displacement compressor according to claim 13, wherein  
the vibration damping alloy is one of ferromagnetic type including Fe-Cr-Al.

20     18.     The variable displacement compressor according to claim 13, wherein  
the vibration damping alloy is a ferromagnetic type including Fe-Cr-Al-Mn,  
Fe-Cr-Mo, Co-Ni and Fe-Cr.

19. The variable displacement compressor according to claim 13, wherein the vibration damping alloy is a compound type including Al-Zn.

5 20. The variable displacement compressor according to claim 13, wherein the vibration damping alloy is a transition type including Mn-Cu and Cu-Mn-Al.

21. The variable displacement compressor according to claim 13, wherein the vibration damping alloy is a twin type including Cu-Zn-Al, Cu-Al-Ni and Ni-Ti.

10

22. The variable displacement compressor according to claim 13, wherein the variable displacement compressor is a clutchless type compressor, in which an external drive source is coupled directly to the drive shaft to operate the compressor and which stops circulation of the gas in an external circuit in a state  
15 that the inclination angle of the cam plate is minimum while the drive shaft rotates.

23. The variable displacement compressor according to claim 13, wherein the vibration damping member is placed on a portion of the housing where the drive shaft is supported.

20

24. The variable displacement compressor according to claim 13, wherein the vibration damping member has a ring shape.

25. The variable displacement compressor according to claim 13, wherein the housing portion having a non-flat surface, the vibration damping member being placed on the non-flat surface.

5

26. A vibration damping mechanism for use in a piston type compressor, a piston compressing gas in a cylinder, compression reactive force being generated in compressing the gas, the compression reactive force being transmitted from the piston to a housing through a compression reactive force transmission path,  
10 the vibration damping mechanism comprising:

a first element located in the compression reactive force transmission path for transmitting the compression reactive force;

a second element located adjacent to said first element in the compression reactive force transmission path for receiving the compression  
15 reactive force from said first element; and

a vibration damping member located between said first element and said second element and made of a predetermined vibration damping alloy for substantially reducing further transmission of the compression reactive force.

20 27. The vibration damping mechanism for use in a piston type compressor according to claim 26, wherein said first element is the piston.

28. The vibration damping mechanism for use in a piston type compressor according to claim 26, wherein said second element is the housing.

29. The vibration damping mechanism for use in a piston type compressor  
5 according to claim 26, wherein said vibration damping member is located on said first element.

30. The vibration damping mechanism for use in a piston type compressor according to claim 26, wherein said vibration damping member is located on said  
10 second element.

31. The vibration damping mechanism for use in a piston type compressor according to claim 26, wherein said vibration damping member is located between said first element and said second element and in contact with said first  
15 element and said second element.

32. The vibration damping mechanism for use in a piston type compressor according to claim 26, wherein said vibration damping member continuously performs vibration absorption performance by maintaining elastic characteristic in  
20 a certain high temperature range.

33. The vibration damping mechanism for use in a piston type compressor



according to claim 26, wherein said vibration damping member continuously performs vibration absorption performance by maintaining elastic characteristic in a certain high range of the compression reactive force.